

## CALFED Bay-Delta Program Project Information Form Watershed Program - Full Proposal Cover Sheet

Attach to the cover of full proposal. All applicants must fill out this Information Form for their proposal. Failure to answer these questions and include them with the application will result in the application being considered nonresponsive and not considered for funding.

Calaveras River Watershed Management Plan Implementation (Phase II)

1. Full Proposal Title: Baseline Water Quality Monitoring

Concept Proposal Title/Number: Calaveras River Watershed Management Plan Implementation Program (Phase II)

Applicant: Calaveras County Water District

Applicant Name: Simon Granville, General Manager

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2. Type of Project: Indicate the primary topic for which you are applying (check only one)

☐ Assessment

☒ Monitoring

☐ Capacity Building

☐ Outreach

☐ Education

☐ Planning

☐ Implementation

☐ Research

3. Type of Applicant:

☐ Academic Institution/University

☐ Non-Profit

☐ Federal Agency

☐ Private party

☐ Joint Venture

☐ State Agency

☒ Local Government

☐ Tribe or Tribal Government

4. Location (including County): Calaveras & San Joaquin Counties, CA

What major watershed is the project primarily located in:

☐ Klamath River (Coast and Cascade Ranges)

☐ Sacramento River (Coast, Cascade and Sierra Ranges)

☒ San Joaquin River (Coast and Sierra Ranges)

☐ Bay-Delta (Coast and Sierra Ranges)

☐ Southern CA (Coast and Sierra Ranges)

☐ Tulare Basin (Coast, Sierra and Tehachapi Ranges)

5. Amount of funding requested: \$ 300,000.00

Cost share/in-kind partners? ☒ Yes ☐ No

Identify partners and amount contributed by each:

CALAVERAS COUNTY WATER DISTRICT \$ 20,000.00

STOCKTON EAST WATER DISTRICT \$ 10,000.00

\$ 30,000.00

6. Have you received funding from CALFED before? \_\_\_\_ Yes \_\_\_\_X No \*

If yes, identify project title and source of funds:

*\* Phase I Calaveras River Watershed Management Plan funded by SWRCB Proposition 204 grant to Stockton East Water District*

By signing below, the applicant declares the following:

1. The truthfulness of all representations in their proposal
2. The individual signing this form is entitled to submit the application on behalf of the applicant (if the applicant is an entity or an organization)
3. The person submitting the application has read and understood the conflict of interest and confidentiality discussion in the Watershed Program Proposal Solicitation Package and waives any and all rights to privacy and confidentiality of the proposal on behalf of the applicant, to the extent provided in the Proposal Solicitation Package.

Simon Granville, General Manager

Printed name of applicant

\_\_\_\_\_  
Signature of applicant

## **Calaveras River Watershed Management Plan (Phase II)**

### **Baseline Water Quality Monitoring Program**

### **Calaveras County Water District**

### **In Cooperation with Stockton East Water District**

## **1. Project Description**

It is the responsibility of the Calaveras County Water District (CCWD) and Stockton East Water District (SEWD) to provide clean, contaminant-free drinking water for residents and visitors to their service area. To do this they draw from mountain water sources that provide clean, a high quality supply of raw water. Whether it is used first for residential, agricultural or industrial purposes and then discharged through pipelines, treatment plants, or groundwater or simply flows through the reservoir unused, all of the water collected by the Calaveras watershed eventually continues downstream into the San Joaquin River system and then on into the Bay Delta. In order to continue to provide high quality drinking water at a minimum cost to the consumer as well as ensure that the Calaveras River continues downstream in a state that supports the beneficial uses of the Bay Delta system, CCWD/SEWD must address not only the future availability of sufficient water supply volume, but also the quality of that water. Without comprehensive baseline water quality monitoring for the Calaveras River, CCWD/SEWD cannot monitor the progress of watershed improvement projects or the degradation of water quality because of increased population and land use intensity. One day these agencies may discover that their raw water supply has become degraded enough to require costly additional treatment. Moreover, the residents of the watershed may discover that fish and wildlife no longer have the volume or quality of water required to survive and reproduce and that ecosystems critical to the health of the Calaveras and San Joaquin Rivers and the Bay Delta system are severely degraded. Baseline water quality monitoring is the foundation for effective watershed improvement and adaptive management.

The Calaveras River Watershed Management Plan (CRWMP) proceeds from the basic assumption that water resource management is most efficiently and effectively conducted on a watershed level. Phase I of this Management Plan was completed this spring. The CRWMP recommends baseline water quality monitoring as the first step to developing even greater understanding of watershed dynamics. Phase II of this project will continue planning activities and implement projects identified in the CRWMP, including:

#### **CRWMP Mission:**

*To restore, sustain, and enhance the Calaveras River Watershed through the use of sound scientific, technical, and planning practices for the benefit of the natural and human environments.*

- Design and implementation of a baseline water quality, stream condition, habitat, and BMP implementation monitoring program;
- Coordination of CRWMP Steering Committee efforts to develop policies, committees, and oversee project implementation;
- Establishment of sub-committees for: monitoring, public outreach, data analysis/management, and project implementation;

- Continuation of public outreach/education programs aimed at building a more informed and involved stakeholder group;
- Submission of a “model watershed project” proposal to San Joaquin Valley Water Institute, Fresno State University;
- Use of a computational model to examine watershed processes using data collected during baseline monitoring to identify protective and restorative measures;
- Implementation of other priority projects identified as feasible during phase I of watershed planning, contingent on funding.

This proposal is to fund the first element of the larger effort – baseline water quality monitoring. The overall CRWMP Implementation Program will take advantage of the strong stakeholder relationships established in the first phase of watershed planning to insure the sharing of information and resources to improve watershed conditions and monitor trends in water quality and the effectiveness of management measures.

The objectives of the CRWMP include but are not limited to the following:

- To restore, protect, and enhance water quality and associated aquatic resources and water supplies
- To conserve, protect, and restore the natural resources of the Calaveras River watershed (land, water, forest, and wildlife)
- To minimize the threat to life and the destruction of property and natural resources from flooding and to preserve (or reestablish) natural hydrologic functions
- To restore, protect, develop, and enhance the ecological, historic, cultural, recreational, and visual amenities of rural and urban areas within the watershed and particularly along stream corridors.

The proposed project will utilize citizen-monitoring groups such as the local Ebbetts Pass Forest Watch group, other volunteers, and trained water treatment plant operators to conduct most of the water quality monitoring. This will significantly reduce the cost that would normally be associated with consultant monitoring.

## **The Watershed**

The Calaveras River watershed is located in the Calaveras, Stanislaus, and San Joaquin Counties of Northern California. The majority of the watershed lies in the northwestern region of Calaveras County; the westernmost portion of the watershed lies in San Joaquin County, and a small, southwestern area lies in Stanislaus County. The Calaveras River watershed above Bellota consists mainly of natural river waterways. The most prominent manmade facility is New Hogan Reservoir, which controls water flow on the Calaveras River downstream of its dam. A few small reservoirs are located upstream in the watershed and have much less of an impact on the main body of the river but may impact the tributaries on which they are located.

The Calaveras River watershed above Bellota is the water supply source for SEWD that owns and operates the Bellota Intake and Dr. Joe Waidhofer Water Treatment Plant (WTP). CCWD owns and operates two water treatment facilities in the middle and upper portions of

the watershed: Jenny Lind and Sheep Ranch WTPs. The primary function of the water supply system is to supply water for municipal and irrigation purposes to communities in Calaveras and San Joaquin Counties. There are 29 operating water diversions between New Hogan Dam and Bellota Weir. These diversions are primarily for agricultural purposes.

The portion of the watershed below the SEWD intake at Bellota consists of both natural and manmade waterways: the Mormon Slough, Potter Creek, the Stockton Diverting Canal, Mosher Slough, the Old Calaveras River Channel, and the confluence of the Stockton Diverting Canal and Old Calaveras River Channel to reform the lower Calaveras River within the City of Stockton. The Calaveras River is a tributary to the San Joaquin River Delta System.

The Calaveras River above SEWD's intake at Bellota has a 473-square-mile drainage basin that includes the watersheds of New Hogan Reservoir (elevation 550 feet) as well as several other smaller reservoirs and natural lakes. The Calaveras River above the Jenny Lind WTP intake has a drainage area of 393 square miles. The Sheep Ranch WTP intake (elevation 2,200 feet) is on San Antonio Creek, a tributary to the South Fork of the Calaveras River and has a drainage area of 25 square miles. The watershed below SEWD's intake at Bellota (elevation 130 feet) has a drainage area of about 141 square miles, much of which is captured by irrigation ponds or recharges groundwater along the base of the old river terrace that separates farmland from the foothills. The North and South Forks of the Calaveras River originate on the western slope of the Sierra Nevada mountain range. The headwaters of the North Fork stem from Pine Ridge, near an elevation of 3,900 feet. The main tributaries of the North Fork of the Calaveras River include Esperanza and Jesus Maria Creeks, as well as the smaller Wet Gulch, Murray Creek, and several other small creeks and streams. The headwaters of San Antonio Creek, which feeds into the South Fork of the river, stem from the Summit Level Ridge, near an elevation of 6,000 feet. Calaveritas, San Antonio, and San Domingo Creeks form main tributaries to the South Fork of the Calaveras River. O'Neill, Willow, and Cherokee Creeks and many other smaller tributaries also flow into the South Fork. The terrain of the watershed varies from mild elevations and meadows in the western rolling foothills to more rugged mountains and wilderness in the eastern high Sierra region.

Tourism and recreation, forest products, mineral resources, and agricultural products are significant elements of the area's economic base. As a result, a variety of land uses are found within the watershed, including residential, forested, industrial, agricultural, and recreational. Residential land uses in Calaveras County are primarily rural residential, with the unincorporated community of San Andreas being the largest urban area within the watershed. The California State Department of Finance (CSDF) estimates the current (2000) population of Calaveras County to be about 38,500 persons. Urban centers compose the central and western areas of the San Joaquin County, while agriculture dominates the east county. According to CSDF population reports, the estimated current (2000) population of San Joaquin County is about 579,712.

## **2. Qualifications and Readiness**

The Calaveras County Water District has not only been a principle partner in watershed management throughout the completion of the Phase I watershed planning project, but has been concerned about watershed issues since its very beginning as a water supply provider. CCWD and the SEWD have agreed that watershed planning is an important priority and that they will share the burden of proposal development, project costs, administrative responsibility, and public outreach. See the attached April 18, 2001 SEWD letter to CCWD summarizing the agreed cooperative approach to Phase II. It is clear that a healthy watershed, including healthy ecosystems and wildlife populations, makes the provision of clean drinking water easier for the water districts.

CCWD will serve as the fiscal agent for this project and will depend on strong support from the members of the stakeholder steering committee and several consultants to manage the activities described in this proposal. CCWD will coordinate meetings, public outreach, sub-committees, data management/web site support, and grants administration aspects of this program. A meeting facilitator and several consultants will be hired for larger projects, including the baseline water quality monitoring program. CCWD agrees to comply with the Standard Terms and Conditions in Section 8 of the original Proposal Solicitation Package. The CEQA lead agency for this project will be the California Department of Water Resources (DWR).

CCWD has the institutional capacity to administer large public works projects that not only require technical expertise, ability to manage multiple consultants, and knowledge of water resource issues, but also demand close relationships with the surrounding community and the ability to continuously communicate the results of technical projects to a lay audience of residents. This ability has been demonstrated in the operation of water treatment and distribution systems as well as the successful completion of Phase I of watershed planning. Furthermore, CCWD successfully coordinated the submission of a controversial project proposal to the State Water Resource Control Board, which brings together the CA Department of Water Resources, CA Department of Forestry, several other state and local agencies, local citizens and land owners, and private interest groups, to investigate water quality issues related to timber harvest activities. This proposal has received favorable response from the Central Valley Regional Water Quality Control Board and has moved through the first round of reviews. (A similar concept proposal was developed for this round of CALFED funding but has not been pursued because of the favorable response in the first round of SWRCB funding review.) This illustrates CCWD's ability to bring diverse interests together to discuss and seek support for investigating and achieving water quality objectives.

In order to connect all watershed projects together a stakeholder group was formed at the onset of the Phase I watershed project. CCWD's close contact with this group has facilitated an atmosphere of collaboration and brought many interests together to work towards building consensus rather than conflict. Because the stakeholder driven steering committee serves as the nexus of this program, implementation can only proceed as a result of collaboration among those stakeholders.

For aspects of the program that transcend CCWD's own technical capacity, a water resource consultant will be hired. Tetra Tech, Inc., the top ranked water resource consultant in the United States according to Engineering News Record's 2000 report, was hired to complete Phase I of the watershed management plan. A consultant with similar qualifications will be used to conduct all aspects of the baseline water quality monitoring program and coordinate some aspects of the stakeholder steering committee activities.

Many elements of the watershed program have begun to come together in early 2001. The Phase I watershed plan was completed in January. This document provides a comprehensive look at the watershed, painting the broad brushstrokes of the watershed management program. The more than seventy recommendations (summarized above) were generated through an inclusive stakeholder process coupled with intense field surveys, GIS mapping, and historic data review. Additional projects include the Calaveras Watershed Sanitary Survey and a report on Mining Ditches, which have been completed, and a feasibility study for restoration of Cosgrove and San Andreas Creeks, which is due before the end of June this year. Given the availability of this volume of information, the timing is opportune to proceed with Phase II of the watershed program.

This spring the stakeholder group met to review and comment on the watershed management plan. Revisions are currently being made according to their response, and new efforts could start as early as fall 2001. Depending on contract negotiation timelines, funding from CALFED could be used immediately as the steering committee transitions to a new structure and the 2001 – 2002 water year begins.

### **3. Budget Narrative**

The approved concept proposal for the Calaveras River Watershed Management Plan Implementation Program (Phase II) was for a \$600,000 grant request with a \$60,000 match. It was decided by CCWD and SEWD that the phase II program should emphasize baseline water quality monitoring and that the requested grant should be reduced to \$300,000 with a \$30,000 match. The total \$330,000 would be allocated as shown below:

\$ 30,000	Project/Contract Administration (primarily CCWD)
65,000	Technical Participation (CCWD)
10,000	Technical Participation (SEWD)
<u>225,000</u>	Water Resources/Watershed Management Consultants
\$ 330,000	

The project would be conducted over a three-year period, resulting in costs of \$110,000 per year. With administrative costs at roughly \$10,000 per year, this leaves \$100,000 per year for technical activities. The grants administration cost would be the in-kind match by the two local districts.

The project consultant costs would be broken down into tasks including:

\$ 15,000	Development of monitoring plan and QAPP
10,000	Development of reports and presentations
<u>200,000</u>	Water quality sampling activities, laboratory analytical work
\$ 225,000	

#### **4. Technical Feasibility**

This section provides an overview of water quality monitoring data that has been collected in the past. Unfortunately, efforts were never made to coordinate these programs so that data and information gathered during each would complement the others. Key water quality data available include nutrients, solids, bacteria, and taste- and odor-causing contaminants. Many of the potential sources of water quality concern were checked during the recent field assessment, which is summarized in Section 6.

##### **Historic Water Quality Monitoring**

EPA maintains historic water quality data collected from surface waters in the Calaveras River watershed in its STORET-LEGACY database. Water quality data are available for the years 1958 to 1987. The data correspond to monitoring performed by the California Department of Water Resources (DWR), USGS, and ACOE. Data were collected by these agencies from a total of about 30 sites within the watershed that include the Calaveras River above and below New Hogan Reservoir, at different locations and depths in New Hogan Reservoir, tributaries to the Calaveras River, Stockton Diverting Canal, Mormon Slough, and raw and treated water at the Dr. Joe Waidhofer (SEWD) WTP. Some sites were sampled quarterly for up to 20 years, while others were only sampled once. Overall, the water quality data cover a wide spectrum of parameters, including major ions, nutrients, metals, organics (such as pesticides), and sediment. Flow data are available for some sites. Substantial variability occurs in sampling frequency, duration, and analyses among the sites for which data are available. The water quality data provided by EPA are currently in two formats: (1) site-specific data for individual sampling events, and (2) a statistical format that present data (for any given site and water quality parameter) according to the number of samples collected and analyzed for a particular parameter. Specifically, mean, variance, standard deviation, and observed minimum and maximum data were provided for each parameter at each site over time.

The proposed baseline water quality monitoring program would create a comprehensive plan for the collection of water quality data throughout the watershed. This would enable the District and other decision makers to assess suspected water quality problems, determine strategic solutions, and justify the cost and effort of implementation.

##### **Interpretation of Historic Water Quality Monitoring Data**

Data from the STORET-LEGACY database were used to demonstrate some general trends in historic water quality within the watershed.



**Flow** – Historic flow data indicate that spring flow can be nearly three orders of magnitude higher than summer flow. In actuality, many of the creeks in the upper watershed can have flows of 1 to 2 cfs for most of the summer. Flow increases significantly below New Hogan Reservoir. This is caused by the regulated release of impounded water through the New Hogan Dam.

**Nutrients** – Nitrate concentrations appear to be lower in the upper watershed and higher at sites below New Hogan Reservoir. These data indicate that nitrate concentrations below the reservoir can be as much as three times higher than nitrate levels in the upper watershed. Phosphate concentrations in New Hogan Reservoir appear to be influenced by season. During spring inflow, lake surface and lake bottom phosphate concentrations are higher than summer levels. The high levels of phosphate present in the reservoir and tributaries during the spring are likely the result of the presence of phosphorous in suspended sediment. The low levels of phosphate present in the reservoir and tributaries in the summer are likely the result of phytoplankton blooms consuming nearly all of the available phosphate.

**Dissolved Oxygen** – Data suggests that DO levels throughout Calaveras River were historically high enough to support cold water fisheries and were above current water quality standards. In comparison, limited data from the 1970's indicate that DO levels were decreasing in the lower Calaveras River watershed.

**Sediment** –For both the North and South Forks of the Calaveras River, sediment load appears to be directly related to flow, regardless of year. Maximum and minimum sediment loads do not appear to be correlated to one another within a given year, and no observable increase or decrease occurs in sediment load over time.

### **Recent Water Quality Monitoring**

It has been several years since DWR or any other agency has conducted intensive field monitoring throughout the Calaveras River Watershed. All recent chemical water quality monitoring has taken place at the water treatment plants for the purposes of addressing drinking water quality standards. Water quality monitoring in the Calaveras River Watershed primarily consists of raw and treated water monitoring conducted at the Sheep Ranch, Jenny Lind, and Dr. Joe Waidhofer (SEWD) WTPs and intakes. The Sheep Ranch and Jenny Lind WTPs are operated by CCWD and supply drinking water to consumers in Calaveras County. SEWD operates the Dr. Joe Waidhofer (SEWD) WTP that supplies drinking water to consumers in the Stockton urban area of San Joaquin County. The amount and type of data available from these three facilities varies. The proposed baseline water quality monitoring program builds on the expertise of the Districts to extend monitoring throughout the watershed.

## 5. Monitoring

Protection and restoration of environmental resources often do not have immediate, observable results and require a monitoring program to provide feedback to ensure that programs are effective and progress is being made to reach goals. The process of taking corrective actions, making changes to the protection and restoration programs, or changing the monitoring itself that result from this feedback is often called "adaptive management." Environmental monitoring can be expensive, and a monitoring program needs to be directed at answering specific questions, through the use of data quality objectives, to keep the program focused and the costs reasonable.

### Questions to be Addressed

Monitoring programs need to address the management questions that are being asked or will be posed in the future. The key is to develop and refine these questions and to ensure the monitoring activities stay on track to answer them in the most cost-effective manner and remain as credible as possible. Some key questions that a monitoring program for the Calaveras River Watershed needs to address and the type of monitoring to address them include:

- What factors in each subwatershed threaten water quality and habitat and require protection of beneficial uses (baseline monitoring)?
- What natural features or characteristics in the watershed are important, and how do they influence overall environmental conditions (baseline monitoring)?
- How does the system work, and what roles do individual components play (for example, groundwater, surface runoff, or terrestrial features) in controlling the functions (baseline monitoring)?
- How sensitive is the overall system to changes, or what is the resiliency to change (baseline and trend monitoring)?
- Is reasonable progress being made toward achieving water quality objectives (trend monitoring)?
- Are the measures, projects, or programs that are being implemented to improve factors affecting water quality and habitat being implemented as proposed (implementation monitoring)?
- Are the measures, projects, or programs that are being implemented to improve factors affecting water quality and habitat effective (effectiveness monitoring)?
- Are narrative and numerical water quality criteria achieved at points of discharge and in ambient water bodies (effectiveness monitoring)?
- Are mitigation measures installed as required (compliance monitoring)?
- Are model-predicted changes in factors affecting water quality and habitat in agreement with field and laboratory measurements (validation monitoring)?

Because the current CRWMP is the first phase of the watershed management process for the Calaveras River watershed, only baseline monitoring has been considered. Taking into consideration the need to address key questions, the limited quantity and age of existing monitoring and study data, and the data requirements for future BASINS modeling, a baseline

monitoring program needs to be developed. As a first step in baseline monitoring, the potential causes/processes of each problem (factors) identified in Phase I of the planning process should be evaluated. The CRWMP provides suggested monitoring or study locations, analysis and study methods, and monitoring frequency or study timeframe for each factor that could threaten water quality or habitat function. The proposed monitoring locations identified in the CRWMP are divided between the lower, middle, and upper portions of the watershed, respectively and can be seen on the enclosed 11 by 17 map.

### **Approach for Developing a Baseline Monitoring Program**

Successful design of a long-term integrated environmental monitoring program for the Calaveras River watershed depends upon the identification of focused questions and data quality objectives that can be answered effectively and which are developed from clear management objectives. The following tasks should be undertaken to ensure that the monitoring program is comprehensive, addresses key questions, and provides useful data.

**Inventory Existing Monitoring Programs.** The goal of this task is to identify and assess existing monitoring programs in the watershed. Monitoring needs identified in Table 3-10, “Summary of Baseline Water Quality Needs,” from the Phase I Study Report, can then be matched with efforts in existing monitoring programs and “gaps in need” identified for augmentation. The first page of the 17-page table is attached. The product will be a database providing information for each existing program on: objectives, questions addressed through monitoring, spatial coverage, attributes monitored, location of sampling sites, frequency of monitoring, primary contact, reporting scheme, and funding. The system will be designed based on input of ongoing coordination, information on existing program status, and existing program data gap analysis.

**Develop Monitoring Elements.** The goal of this task is to narrow the focus of monitoring from the vast number of questions and parameters that could be examined to those that will meet specific information needs. The strategy will be to identify current needs, identify existing programs, identify monitoring gaps, and recommend modifications of existing programs to fill those monitoring gaps. This will allow the monitoring efforts to be more effective by focusing on those areas in the watershed that have the greatest potential to provide useful scientific information. The product will be a document identifying monitoring objectives, data quality objectives, focused questions, and specific monitoring elements to address the questions and data quality objectives; and will include a recommendation for a detailed monitoring plan and quality assurance project plan.

**Develop Process for Data Management.** Integrated data management will need to incorporate all aspects of data collection and dispersal. Data and information will need to be made accessible to agency staff and stakeholders in time to meet program timelines and provide information for adaptive management planning. Data will also need to be updated regularly to meet the different program reporting timelines so that information from one program can be related to another.

The goal is to develop a comprehensive, integrated data management system that will allow agencies and stakeholder access to biological, water quality, hydrodynamic, and physical data. The data can be spatially referenced through a GIS. Data will be stored in an integrated system of distributed relational databases that can be accessed remotely by a wide range of users. Simple queries may be conducted "on the fly" by scientists through menu-driven or graphical user interfaces; more complex queries can be generated by each entity's database programmers. The intent of the database system is not to duplicate or replace the efforts of any one of the entities involved, but to provide a comprehensive, integrated source of data for scientists and decision-makers. This will yield a "level playing field" for all parties by providing a common, comprehensive set of data for all types of analyses, reports, studies, and models.

The strategy of data management will be for those who are collecting data to manage it locally in a database and link individual databases into a single relational database that will be made accessible through the Internet. Each participating agency will have an export feature built into their local database that will provide any updates or corrections to the comprehensive database. The agencies providing their data will determine when data will be made available to the server.

**Develop Process for Data Interpretation and Reporting.** Easily understood reports released in a timely manner provide the all-important feedback about monitoring results to managers and regulators. Appropriate interpretation and display must accompany monitoring data. Annual monitoring reports are envisioned that include both data and interpretive graphs and text. A committee of managers responsible for monitoring programs, stakeholders, and regulatory representatives will meet to design an Interpretation and Reporting Plan that provides for timely and objective interpretation of the monitoring data.

## 6. Scientific Justification

A field assessment of potential sources of contaminant loading is a critical component of the CRWMP. The field assessment provides a better understanding of water quality and aquatic habitat trends, existing and potential water quality problems, and opportunities for water quality and habitat enhancement. A field assessment of selected sites in the Calaveras River watershed was conducted in July 2000. The field assessment involved visiting and documenting conditions at 100 locations in the watershed, including potential point and nonpoint sources and potential water quality and habitat monitoring locations. The goal of the field assessment was to provide information that SEWD, CCWD, and stakeholders will use to:

- Understand the watershed and its subwatersheds;
- Identify potential locations of major contaminant sources;
- Identify baseline water quality monitoring needs;
- Understand existing and potential water quality and habitat problems and trends;
- Estimate the relative magnitude of contaminant sources;
- Identify opportunities for water quality and habitat enhancement.

The field assessment was necessary to evaluate the accuracy of information gathered from existing reports and maps, field check potential point and nonpoint sources of contamination, identify cumulative water quality impairment, identify locations for water quality and habitat monitoring, and survey habitat locations.

The information gathered during this reconnaissance was evaluated to identify known and potential point and nonpoint pollution sources that contribute to impacts of water quality and habitat. The following criteria were used to identify field assessment locations.

- Selected representative sources that were identified in the 1995 Calaveras River Watershed Sanitary Survey as contributors to water quality degradation
- Locations identified by SEWD and CCWD as potentially affecting drinking water quality and habitat viability
- Sites that represent categories of sources that were not evaluated in detail in the previous sanitary survey, such as mines, ranchettes, vineyards, row crops, orchards, golf courses, septic systems, timber harvest operations, storm water runoff, and hydromodification features (dams, weirs, flumes, and dikes)
- Sites that involve economically important resources, including drinking water intakes, fish habitat, recreational areas, and agricultural areas
- Potential sites for future water quality and habitat monitoring efforts

The field assessment was qualitative and does not provide a comprehensive list of potential sources in the watershed. Instead, it identifies categories of potential pollutant sources in the watershed and the types of sources thought to contribute to water quality and habitat impacts. Therefore, quantitative assessment of potential sources will require development of a baseline water quality monitoring program before any potential water quality or habitat impacts can be verified.

The Field Assessment Report (Tetra Tech, 2000) identified impacts that appeared to increase from the upper to lower reaches of the watershed. Potential impacts in the upper watershed may be related to nutrient, bacteria, and sediment loading of the North and South Forks of the Calaveras River. Potential impacts of the South Fork of the Calaveras River may be related to livestock grazing, residential ranchettes, point and nonpoint industrial discharges, and hydromodification (diversion dams and ditches) in the lower reaches of Cherokee, San Domingo, San Antonio, Willow, and Calaveritas Creeks, just east and downstream of the Highway 49 corridor. Potential impacts of the North Fork of the Calaveras River may be related to uses such as livestock grazing, residential ranchettes, and storm water discharges, and hydromodification (diversion dams and ditches) in the lower reaches of Murray, San Andreas, Jesus Maria, and Chili Gulch Creeks, just east and downstream of the Highway 12 and 49 corridors. A few smaller creeks that discharge directly to New Hogan Reservoir, such as Haupt Creek, also may contribute to water quality impacts from such uses as livestock grazing and point and nonpoint industrial discharges.

Potential impacts in the lower watershed may be related to nutrient, bacteria, sediment loading, and migration barriers by a few major tributaries, diversions, and water management practices. Potential impacts in the Lower Calaveras River may be related to land uses such as

livestock grazing, residential ranchettes, septic system failure, point and nonpoint industrial discharges, and golf course drainage associated with Cosgrove Creek; livestock grazing, residential ranchettes, septic system failure, agricultural practices, and stream bank erosion associated with Indian Creek; and stream bank undercutting and mass wasting along the Lower Calaveras River and gravel mining pits within the active channel of the river. Below the Bellota Weir, potential impacts of the Lower Calaveras River system may be related to water diversion, placement of flashboard dams, natural seepage from the Old Calaveras River Channel, agricultural drainage, and unscreened pump diversions.

We have attached Figures 3-10, Historic Staff Gauge and Water Quality Monitoring Locations and 3-16, Field Assessment Locations, Index Sheet (Entire Watershed), from the Phase I Study Report. These figures provide information on habitat monitoring sites, known/potential point and non-point sources and water quality monitoring sites. Most sites selected for this project will overlap those shown on these maps though an additional number of sites will need to be selected to cover the full scope of the watershed and account for spatial variability.

## **7. CALFED Objectives**

This project meets most principles of the CALFED Watershed Program: the stakeholder group is representative of the community, is collaborative, coordinates with multiple levels and objectives of local and state agencies, and includes public outreach and educational tasks to increase understanding of watershed issues. The monitoring components are based on standard scientific monitoring protocols and a great deal of field reconnaissance completed during Phase I. The project also satisfies the three CALFED implementation priorities by building local capacity to assess and manage watersheds that affect the Bay-Delta system, by developing agency and stakeholder relationships, and by developing watershed assessment plans via baseline water quality monitoring. Resulting data will lead to design and development of a watershed maintenance action plan.

The nature of the project itself encourages information exchange because of the strong role of the central stakeholders group steering committee, which will be responsible for sharing information with all partner agencies, surrounding watersheds, and the CALFED Watershed Work Group. Also, because Calaveras County encompasses one complete watershed (Calaveras River) and two partial watersheds (Stanislaus River watershed is 1/2 in Tuolumne County, and Mokelumne River watershed is 1/2 in Amador County), there is a great deal of stakeholder overlap in all three watershed efforts. Although the fledgling Stanislaus River group has temporarily disbanded, the other two watershed (Calaveras and Mokelumne River) groups are natural allies.

Information naturally flows from one group to the other because many of the stakeholders and agency and County officials are the same individuals. These three watersheds share a similar geography and climate, and have similar land-use history. Except for one incorporated city (City of Angels), CCWD and the Calaveras County Board of Supervisors are the primary local agencies within Calaveras County with watershed responsibilities and jurisdiction over approximately 40,000 county residents. Results from the water quality monitoring program

will assist these groups, County and State agencies, and the public to evaluate and to make better decisions regarding the future of water resources protection and development in Calaveras County.

Technical information on watershed projects, including results of this monitoring program (or where to obtain the information), will be:

- posted on the CCWD watershed web site;
- available to State agencies via the participation of Steering Committee Representatives;
- shared with the San Joaquin Valley Water Institute staff, should this effort be chosen as one of the Institute's "model projects";
- advertised in stakeholder group members' newsletters and brochures;
- distributed to CALFED Watershed Program officials as part of the project's Final Report; and
- may be distributed by CD, depending on demand.

The watersheds of the San Joaquin Valley make up a significant portion of the headwaters of the Bay Delta system. Developing an understanding of watershed issues, creating a concerned community, and implementing watershed restoration measures are critical to the health and future of the Bay Delta system. Phase II of the Calaveras Watershed Management Plan provides a framework for watershed management, collects baseline water quality data, and implements important projects on the Calaveras River. This project collects the baseline data necessary for Phase II to be effective. Moreover, it provides a model for the neighboring Mokelumne and Stanislaus watershed stakeholder groups, and for other watersheds and counties in the Central Valley region.

## 8. Additional Information

In order to accomplish the objectives of the Calaveras Watershed Management Plan (CRWMP) an action plan will be developed that builds upon information gathered during the first phase of the planning effort. The outcome of the CRWMP Implementation Program will be the assessment and development of mechanisms to address the recommendations of the CRWMP which are grouped in five general areas of need below:

- A **STRUCTURE** for watershed management and decision making:

- |  |  |
|--|--|
| 1. formal agreements among participating agencies            | 5. programmatic EIR/EIS  |
| 2. ranking and prioritizing of issues and projects           | 6. technical assistance and review of projects and critical issues |
| 3. subcommittees to manage all elements of implementation    | 7. coordination of land use planning                               |
| 4. expertise on policy issues including codes and ordinances |  |

- A **MONITORING** program to provide baseline data as well as trend and effectiveness evaluations:

- |   |  |
|---|--|
| 1. database of current monitoring programs and available data | 5. chemical water quality data                           |
| 2. QAPP to ensure high quality data collection                | 6. physical and biological data                          |
| 3. habitat evaluation program                                 | 7. implementation/effectiveness monitoring plan for BMPs |
| 4. meteorological and flow data                               | 8. field assessments of impairment sources               |

- An **OUTREACH** program to educate stakeholders and members of the public:

- |  |  |
|--|--|
| 1. issue-focused meetings for general and targeted audiences         | 4. water quality, biological, and physical parameters    |
| 2. newsletter, brochure, and project progress reports,               | 5. BMPs for watershed protection                         |
| 3. advertise group's purpose, activities & watershed management plan | 6. NPS pollution sources including failed septic systems |

- The **TECHNICAL CAPACITY** for data management, modeling, analysis, and web-based presentation of results:

- |   |   |
|---|---|
| 1. creation of a GIS for data management and modeling | 2. develop BASINS model to predict watershed response |
|---|---|

- An **IMPLEMENTATION** plan that facilitates funding, permitting, construction of BMPs:

- |  |   |
|--|---|
| 1. a water master plan to address water development issues     | 5. storm water and NPS pollution prevention activities  |
| 2. funding and resource identification and application         | 6. target pollutant loads and standards                 |
| 3. integration of existing agency BMP programs                 | 7. timeline development and project prioritization      |
| 4. stream and habitat restoration and erosion control measures | 8. riparian zone and wetland restoration and protection |

While fulfilling all of the above needs within the context of this project phase is impossible, this outline serves to illustrate the scope of all watershed management activities, which ultimately must play a role if watershed planning and management are to be successful. The focus of this stage of watershed planning will be primarily on supporting the organizational



structure through which all watershed activities will be channeled, continuing outreach activities that promote watershed stewardship, and conducting baseline water quality monitoring in order to determine priorities and mark progress toward watershed program goals.

Because the needs of the watershed will change over time so will the required administrative and technical capacity. While watershed management is ongoing, the creation of a structure including the establishment of oversight committees and definition of leadership roles to manage project needs will be completed within the first six months of Phase II project funding. This structure will be designed such that it is capable of growing and changing in response to changing watershed needs. Regardless of the schedule for committee meetings and management structure development, baseline water quality monitoring will begin at the beginning of the first water year of the project. The intensity of the monitoring program will vary with the frequency and severity of wet weather events. Ideally a range of storms would be represented in both wet and dry years to effectively characterize water quality parameters, the project will employ the most cost effective and practicable methods to capture as much data as possible within the first two water years of the project. This may include the training and use of CCWD's water treatment plant technicians who both live locally and are skilled at water quality testing in a treatment plant environment to conduct wet weather sampling as required in field locations. This will build the capacity of CCWD to include field sampling expertise, help include local stakeholders from the community, and employ a more efficient sampling method that is not dependent on expensive consulting services. Outreach and public education activities are always ongoing, though changing as watershed constituents develop a more sophisticated understanding of water quality issues and watershed processes.

### **Priority Activities**

- Establish policies and committees;
- Implement baseline water quality monitoring;
- Use baseline monitoring to screen for abandoned mine issues;
- Incorporate current report on abandoned mining ditches into watershed plan;
- Identify areas where failed septic tanks are a problem and aid landowners in developing solutions;
- Identify, evaluate and schedule applications for required funding for potential projects;
- Formalize agreements with participating agencies;
- Continue public outreach & educational efforts, including newsletters, brochures, targeted outreach at public events and meetings, and stakeholder advertising;
- Submit a "model watershed project" proposal to San Joaquin Valley Water Institute, Fresno State University.

**Activities for which Funding is being Sought:**

- Timber Harvest Cooperative Monitoring Program (A Prop 13-Non-Point Source grant application was submitted 2/1/01.)
- Baseline Water Quality Monitoring Program
- Feasibility and Preliminary Design for Restoration of White Pines Lake and Mill Ponds (A separate grant application will be filed with another grant program such as Prop 13.)
- Implement a Creek Restoration Project on portions of San Andreas & Cosgrove Creeks (Feasibility and preliminary design will be complete on 7/1/01 - A separate grant application will be filed to fund implementation.)

**Calaveras County Water District -- Baseline Water Quality Monitoring Project  
CALFED WATERSHED PROGRAM BUDGET AND PROJECT SUMMARY**

Task Description		Completion date	Match funds	CALFED funds	Total
Task 1:	Contract Management				
Task 1a:	<b>Contract Management with Funding Agency</b> <i>Develop Quarterly Progress Reports, develop invoices and prepare requests for payment, track and schedule contractual obligations and dates</i>	Ongoing	\$10,000	\$5,000	\$15,000
Task 1b:	<b>Contract Management with Consultant</b> <i>records</i>	Ongoing	\$10,000	\$5,000	\$15,000
<b>Task Subtotal</b>			\$20,000	\$10,000	<b>\$30,000</b>

**Task Product(s):** Production of quarterly progress reports, invoice preparation and receipt, payment receipt and record keeping, adherence to contractual obligations

**Success Criteria:** *Submission of meaningful quarterly reports that result in satisfaction from CALFED, indicating the overall success of the project*

Task Description		Completion date	Match funds	CALFED funds	Total
Task 2:	Technical Oversight				
Task 2a:	<b>Program</b> <i>SEWD &amp; CCWD desire active participation in developing and improving the monitoring program</i>	Month 6	\$1,000	\$5,000	\$6,000
Task 2b:	<b>Staff Involvement in Water Quality Sampling</b> <i>District staff will be actively involved in sampling, ie.: storm water runoff sampling</i>	Month 36	\$5,000	\$35,000	\$40,000
Task 2c:	<b>Coordinate Sampling with State Agencies</b> <i>CVRWQCB and DWR sampling coordination and potential use of DWR laboratory for analysis</i>	Month 36	\$2,000	\$10,000	\$12,000
Task 2d:	<b>Coordinate Sampling with Citizen Monitoring Programs</b> <i>Citizens in the Calaveras River Watershed are currently being trained by SWRCB for citizen monitoring programs. Intent would be to incorporate the citizen monitoring programs into the Calaveras River Watershed Baseline Water Quality Monitoring Program</i>	Month 36	\$2,000	\$15,000	\$17,000
<b>Task Subtotal</b>			\$10,000	\$65,000	<b>\$75,000</b>

**Task Product(s):** Technical oversight of water quality monitoring

**Success Criteria:** Successful participation of 9 water quality monitoring teams, successful collection of data at all sites, on time reporting and project completion

Task Description		Completion date	Match funds	CALFED funds	Total
Task 3:	Water Quality Monitoring Plan and QAPP Development	Month 3			
Task 3a:	Review Watershed Management Plan	Month 1		\$1,000	\$1,000
Task 3b:	Develop monitoring site prioritization	Month 2		\$1,000	\$1,000
Task 3c:	Determine Parameters to be monitored and frequency of monitoring	Month 3		\$2,000	\$2,000
Task 3d:	Write QAPP	Month 3		\$3,000	\$3,000
Task 3e:	Write Monitoring plan and SOP	Month 3		\$3,000	\$3,000
<b>Task Subtotal</b>			\$0	\$10,000	<b>\$10,000</b>

**Task Product(s):** Monitoring Plan, QAPP, SOP

**Success Criteria:** *On time delivery of task products, approval of plan by stakeholders, plan successfully addresses monitoring needs of watershed*

Task Description		Completion date	Match funds	CALFED funds	Total
Task 4:	Water Quality Monitoring Training	Month 6			
Task 4a:	Consultant participation in training activities	Month 6		\$1,200	\$1,200
<b>Task Subtotal</b>			\$0	\$1,200	<b>\$1,200</b>

**Task Product(s):** Water Quality Monitoring one day training

**Success Criteria:** *attendance of at least 9 teams of water quality monitors*

Task Description		Completion date	Match funds	CALFED funds	Total
Task 5:	Sampling Site Reconnaissance	Month 6			
	Task 5a: Field location of all sampling sites	Month 6		\$1,800	\$1,800
	Task 5b: Creation of sampling site map	Month 6		\$1,000	\$1,000
	Task 5c: Creation of sampling site directions and descriptions	Month 6		\$1,000	\$1,000
<b>Task Subtotal</b>			\$0	\$3,800	<b>\$3,800</b>

**Task Product(s):** Site location maps and descriptions

**Success Criteria:** Identification of 100 sites which meet the criteria of the monitoring plan

Task Description		Completion date	Match funds	CALFED funds	Total
Task 6:	Water Quality Monitoring	Month 36			
	Task 6a: Collection of Water Samples	Month 36		\$10,000	\$10,000
	Task 6b: Analysis of Water Samples	Month 36		\$190,000	\$190,000
	Task 6c: Reporting of Analysis	Month 36		\$10,000	\$10,000
<b>Task Subtotal</b>			\$0	\$210,000	<b>\$210,000</b>

**Task Product(s):** Water quality monitoring data and report

**Success Criteria:** Data collected on selected parameters at 100 stations over 2 water years 4 times per year

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**PROJECT SUMMARY**

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Task Description		Completion date	Match funds	CALFED funds	Total
TASK 1	Contract Management	Ongoing	\$20,000	\$10,000	\$30,000
TASK 2	Technical Oversight	Ongoing	\$10,000	\$65,000	\$75,000
TASK 3	Water Quality Monitoring Plan and QAPP Development	Month 6	\$0	\$10,000	\$10,000
TASK 4	Water Quality Monitoring Training	Month 6	\$0	\$1,200	\$1,200
TASK 5	Sampling Site Reconnaissance	Month 6	\$0	\$3,800	\$3,800
TASK 6	Water Quality Monitoring	Month 36	\$0	\$210,000	\$210,000
<b>PROJECT TOTAL</b>			<b>\$30,000</b>	<b>\$300,000</b>	<b>\$330,000</b>

**Calaveras County Water District -- Baseline Water Quality Monitoring Project**

Task Description	Labor Rate*	Hours	Total Labor	Supplies	Travel	Materials**	Sub-contract	Match	CALFED	Total
Task 1 Contract Management	\$50	600	\$30,000	\$0	\$0			\$20,000	\$10,000	\$30,000
Task 2 Technical Oversight	\$75	1000	\$75,000	\$0	\$0			\$10,000	\$65,000	\$75,000
Task 3 Water Quality Monitoring Plan and QAPP Development	\$75	133	\$10,000	\$0	\$0		\$10,000		\$10,000	\$10,000
Task 4 Water Quality Monitoring Training	\$65	18	\$1,200	\$0	\$0		\$1,200		\$1,200	\$1,200
Task 5 Sampling Site Reconnaissance	\$65	58	\$3,800	\$0	\$0		\$3,800		\$3,800	\$3,800
Task 6 Water Quality Monitoring	\$55	364	\$20,000	\$0	\$0	\$190,000	\$210,000		\$210,000	\$210,000
<b>Totals:</b>		<b>2174</b>	<b>\$140,000</b>	<b>\$0</b>	<b>\$0</b>	<b>\$190,000</b>	<b>\$225,000</b>	<b>\$30,000</b>	<b>\$300,000</b>	<b>\$330,000</b>

\*Provide benefits/salary percentage here (labor rates for consultants include overhead giving a high percentage here)

60%

\*\*Materials cost includes the cost of laboratory analysis